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10/598,058	04/19/2007	Kevin Francis Dolman	21503-0002US1	9663

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EXAMINER	
WASAFF, JOHN SAMUEL	
ART UNIT	PAPER NUMBER
3742	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

Office Action Summary	Application No.	Applicant(s)	
	10/598,058	DOLMAN, KEVIN FRANCIS	
	Examiner	Art Unit	
	JOHN WASAFF	3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 January 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *01/21/11*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 6, 25 are objected to because of the following informalities: claim 6, lines 2-3 recites "an iron-containing material (other than a chromium-containing ferroalloy)." Applicant is requested to remove the parentheses so that it is evident that the iron-containing material must be formed of a material other than a chromium-containing ferroalloy. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 19-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 19 claims both an apparatus ("welding consumable material of claim 15"; line 3) and method steps of using the apparatus. Appropriate correction is required.

5. Claims 25, line 1 recites "[t]he weld deposit of claim 6," which lacks antecedent basis. Appropriate correction is required.

6. Claims 26, line 1 recites "[t]he weld deposit of claim 6," which lacks antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 6, 8, 13, 14, 15, 19, 20, 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Crook (GB 2039950 A).

9. In claims 1, 15, and 20, Crook shows a method of producing a carbide-containing ferroalloy welding consumable material for subsequent use for producing a hardfacing on a suitable substrate (carbide-containing alloys for making hardfacing depositions on substrates, with the inclusion of iron in the alloy thereby forming a "ferroalloy"; abstract; p. 1, ln. 45-50; p. 1, ln. 55-60) comprising the steps of: melting at least two solid feed powders to form a homogenous melt (multiple feed powders mixed and melted evenly; p. 2, ln. 60-65), the homogenous melt having a required concentration of carbon, chromium, and manganese for a chromium carbide-containing ferroalloy welding consumable material (chromium, carbon, and manganese seen composition of hard alloy; p. 1, ln. 30-50); and forming a solid carbide-containing ferroalloy welding consumable material from the melt (molten alloy formed into powder, i.e., solid carbide-containing ferroalloy; p. 3, ln. 1-5).

10. In claim 6, Crook shows forming the homogeneous melt with an iron-containing material to dilute the chromium concentration in the melt (melt formed with iron; p. 1, ln. 45-50).

11. In claim 8, Crook shows de-gassing the melt (melting takes place in protective atmosphere of inert gas, e.g., argon; p. 2, ln. 60-65) so that the solid ferroalloy welding

consumable material facilitates a stable welding arc in a subsequent hardfacing operation and thereby minimizes porosity in the resultant hardfacing and eliminates ejection of ferroalloy powder from the weld pool (though not stated explicitly, inert gas capable of minimizing porosity).

12. In claim 13, Crook shows casting the melt into a suitable mould and thereafter breaking up the cast product into a suitable form, such as powder form (molten alloy cast into mould, only to be broken into powder form; p. 3, ln. 1-5).

13. In claims 14 and 26, Crook shows atomizing the melt with a suitable gas to form solid powder from the melt, the gas being argon (melt may be atomized with argon gas; from p. 2, ln. 65 to p. 3, ln. 5).

14. In claim 19, Crook shows forming a weld pool of the chromium carbide-containing ferroalloy welding consumable material and a welding wire material on a substrate and thereafter depositing a hardfacing weld deposit of material from the weld pool on the substrate (chromium carbide-containing ferroalloy welding consumable formed into wire and used for hardfacing; p. 3, ln. 10-20).

Claim Rejections - 35 USC § 102/103

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

17. Claims 15, 20, and 26 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Crook.

18. Crook teaches a chromium-carbide containing ferroalloy welding consumable material that includes a hardfacing weld deposit on a suitable substrate, the weld deposit being atomized with argon (see abstract; p. 1, ln. 45-50; p. 1, ln. 55-60; p. 3, ln. 1-5 of Crook).

Regarding the product-by-process aspect of the claims, although the product may be produced by a different process, the product appears to be the same. See In re Fessmann, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974); In re Brown, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972).

19. Claims 15 and 20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hulsewig (US Patent No. 3,597,583).

20. Hulsewig teaches a chromium carbide-containing ferroalloy consumable material and a hardfacing weld deposit on a suitable substrate (consumable electrode that contains carbon and iron for making weld deposits that are resistant to rusting; see abstract, col. 2, ln. 45-55 of Hulsewig).

Regarding the product-by-process aspect of the claims, although the product may be produced by a different process, the product appears to be the same. See In re Fessmann, 489

F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974); In re Brown, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972).

Claim Rejections - 35 USC § 103

21. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

22. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

23. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crook in view of Scruggs (US Patent No. 5,695,825).

24. Crook teaches all the features as set forth above, but fails to teach a chromium-containing ferroalloy material.

Scruggs teaches a ferrous hard-facing material that comprises a pre-alloyed powder, or mixture of powders, that contains ferrochromium (i.e., chromium-containing ferroalloy material; col. 3, ln. 38-42 of Scruggs).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Crook with Scruggs, since the source materials of Scruggs provide for a more dense, wear-resistant hardfacing surface (col. 2, ln. 50-55 of Scruggs).

25. Claims 4-5, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crook in view of Nayar (US Patent No. 3,862,840).

26. Crook teaches all the features as set forth above, but fails to teach: forming the homogeneous melt with a source of free carbon; adding graphite to the melt to supersaturate the melt with carbon; comprises holding a melt temperature to dissolve carbon in the melt.

Nayar teaches a process for manufacture of hard and non-deformable alloys that adds free carbon in the form of graphite to the pre-alloy powder in order to increase the carbon ratio (addition of graphite increases carbon ratio beyond initial value, which results in supersaturating; col. 6, ln. 25-40 of Nayar). The alloy is then held at a melting temperature (col. 6, ln. 25-40 of Nayar).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include free carbon in the melt, since it provides for a higher carbon concentration, which yields higher strength and greater performance in the weld deposit area (col. 6, ln. 35-40 of Nayar).

27. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crook in view of Oberly et al. (US Patent No. 3,663,313).

28. Crook teaches all the features as set forth above, but does not teach removing slag from the melt.

Oberly teaches a welding flux composition that describes removing slag (col. 4, ln. 1-5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize slag removal, since doing so provides for a weld deposit substantially free of defects (col. 1, ln. 15-25).

29. Claims 10, 12, 16, 18, 21, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crook in view of Dolman (WO 84/04760)

30. Crook teaches all the features as set forth above, including boron up to a maximum of 15 % by weight (boron comprises 1 % by weight of weld; p. 1, ln. 45-50), but fails to teach: ferroalloy welding consumable material has a chromium/carbon ratio less than 7.0; the ferroalloy welding consumable material has a combined carbon content greater than 7.5 % by weight.

Dolman teaches a wear-resistant, high chromium white iron that contains carbon up to 9% by weight and chromium between 30 and 40 % by weight (i.e., resulting chromium/carbon ratio of less than 7; p. 6, ln. 6-11 of Dolman).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Crook to include the features of Dolman, to insure a hardfacing alloy with high abrasion resistance combined with high fracture toughness (p. 5, ln. 5-10 of Dolman).

Regarding the exact values of the range, it would have been obvious to one of ordinary skill in the art at the time of the invention to attain the desired values, since it has been held that when the general conditions are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

31. Claims 11, 17, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crook.

32. Crook teaches all the features as set forth above, including: the ferroalloy welding consumable material has chromium content in the range 30-65 % by weight, a chromium content of less than 35 % by weight (chromium 30-37 % by weight; p. 2, ln. 30-35).

Regarding the exact values of the range, it would have been obvious to one of ordinary skill in the art at the time of the invention to attain the desired values, since it has been held that when the general conditions are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

33. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crook in view of McKenna (US Patent No. 2,515,463).

34. Crook teaches all the features as set forth above, but fails to teach the iron-containing material is selected from the group consisting of scrap steel and scrap high chromium white cast iron.

McKenna teaches a process for making titanium carbide that includes adding steel scrap (col. 2, ln. 30-35 of McKenna).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Crook with McKenna, since, as McKenna demonstrates, it is known in the art to use steel scrap instead of pure iron (col. 2, ln. 20-25 of McKenna).

Response to Arguments

35. Applicant's arguments with respect to claims above have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

36. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: see Notice of References Cited.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN WASAFF whose telephone number is (571)270-1283. The examiner can normally be reached on Monday through Friday, 7:30am to 5:00pm, alternating Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu Hoang can be reached on (571)272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JOHN WASAFF/
Examiner, Art Unit 3742
03/22/11

/M. Alexandra Elve/
Primary Examiner, Art Unit 3742